

MOUNTAIN COUNTIES WATER RESOURCES ASSOCIATION

WATER NEEDS ASSESSMENT

PRELIMINARY

INTRODUCTION

The water needs assessment is being prepared for the Mountain Counties Water Resources Association (Association)^{1/} to facilitate effective participation of the Association's members, from an "Area of Origin" perspective, in the CalFed process to resolve Bay Delta issues. In this regard, it is the intent in preparing this document to identify:

1. The magnitude and time that supplemental water supplies will be required to meet the increasing water demands of the Mountain Counties Region (Region).
2. Potential solutions to meet the increased demands.
3. Problems or constraints in implementing potential solutions.

THE MOUNTAIN COUNTIES REGION

The Association, whose members include counties and special districts, represent a major portion of the watersheds on the western slope of the Sierra Nevada Mountains that are tributary to the Sacramento and San Joaquin Delta (Map 1). The region includes the watersheds for the following rivers:

Yuba	Cosumnes	Stanislaus
Bear	Mokelumne	Tuolumne
American	Calaveras	Merced

POPULATION

Although the region is predominantly rural, it is expected to continue to experience a significant increase in population as people from the heavier populated communities in the valley seek residence in the foothill communities. Population projections reported by the California State Department of Finance, as used by the California Department of Water Resources in preparing Bulletin No. 160-98, are presented in Table 1.

The estimated population for the region represents approximately 1.8 percent and 2.3 percent of the statewide population, respectively, in 1995 and 2020.

The ability of the region to expand basic infrastructure (i.e., water and sewer) to accommodate the increasing population is constrained by the relatively small customer base that exists in most areas.

WATER SUPPLY AND USE

The primary source of most public water supply is locally developed surface water. Many old and unimproved conveyance systems developed for mining operations are still in use. These systems include ditches, flumes, and pipes that have been in use for over 100 years. Many of these systems have significant losses, however, repairing or replacing some systems have been opposed by environmental groups and regulatory agencies since the losses have created wetland habitat. While water that is recovered from repairing or replacing the conveyance system may provide much needed additional supply, the associated costs are high.

^{1/} The Mountain Counties Water Resources Association includes the counties of Sierra, Nevada, Yuba, Placer, El Dorado, Amador, Calaveras, Tuolumne, and Mariposa.

The water demand for the respective counties was estimated by the California Department of Water Resources for Bulletin No. 160-98. The estimated water demand for each county for 1995 and 2020, is presented in Table 2. The water demand estimated for 1995 includes all water use, i.e., public water supply as well as groundwater supplied by privately owned wells.

The water demand for the region, excluding the cited demand for environmental use, represents approximately 2.5 percent and 3.0 percent of the statewide water demand for 1995 and 2020, respectively.

COUNTY/DISTRICT WATER NEEDS PROFILE

Summarized on the following sheets are water needs profiles for counties and districts within the Association (profile sheets have not been completed for all counties). The situation within the region with respect to having adequate water supplies generally falls into one of the following categories:

1. Where water entitlements are fully used and supplemental entitlements and infrastructure are required immediately.
2. Where available supplies are fully used and new infrastructure to recover water losses will postpone the need for supplemental entitlements.
3. Where entitlements are adequate, but significant infrastructure is required to convey the water to its place of use.

The water needs profiles for the respective counties and districts follow in the order presented below:

Sierra County (N/A)

Nevada County (N/A)

Yuba County (N/A)

Placer County (N/A)

El Dorado County:

Georgetown Divide Public Utility District

Grizzly Flats Community Services District

Amador County

Calaveras County

Tuolumne County

Mariposa County (N/A)

PRELIMINARY

LEGEND

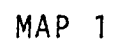


TABLE 1

MOUNTAIN COUNTIES WATER RESOURCES ASSOCIATION

ESTIMATED POPULATION: 1995, 2020

County	1995	2020
Sierra	3,305	3,805
Nevada	75,050	135,650
Yuba	62,300	113,100
Placer	191,475	345,875
El Dorado	112,400	215,200
Amador	32,600	65,900
Calaveras	36,950	94,500
Tuolumne	51,500	91,900
Mariposa	15,900	28,000
TOTAL	581,480	1,093,930

Source: California Department of Finance, compiled by the California Department of Water Resources, Bulletin No. 160-98.

TABLE 2

MOUNTAIN COUNTIES WATER RESOURCES ASSOCIATION

ESTIMATED WATER DEMAND (DRY YEAR): 1995, 2020
(acre-feet/year)

County	Municipal & Industrial		Agricultural		Environmental		Total w/Environmental		Total w/o Environmental	
	1995	2020	1995	2020	1995	2020	1995	2020	1995	2020
Sierra	1,260	1,008	48,800	48,800	-	-	50,060	49,800	50,060	49,800
Nevada	18,913	31,064	44,500	44,500	-	-	63,413	75,564	63,413	75,564
Yuba	23,570	36,758	441,300	397,500	240,000	240,000	704,870	674,258	464,870	434,258
Placer	74,432	116,263	280,400	258,800	21,700	92,000	376,532	467,063	354,832	375,063
El Dorado	27,878	47,680	22,700	23,700	-	-	50,575	71,380	50,575	71,380
Amador	10,666	16,389	17,600	16,600	-	-	28,266	32,989	28,266	32,989
Calaveras	12,468	27,074	7,300	9,800	110,000	98,000	129,768	134,874	19,768	36,874
Tuolumne	13,212	20,326	13,300	20,900	64,000	64,000	90,512	105,226	26,512	41,226
Mariposa	3,911	6,888	7,200	7,200	367,000	367,000	378,111	381,088	11,111	14,088
TOTAL	186,310	303,450	883,100	827,800	802,700	861,000	1,872,107	1,992,242	1,069,407	1,131,242

Source: Information compiled by the California Department of Water Resources, Bulletin No. 160-98.

MOUNTAIN COUNTIES WATER RESOURCES ASSOCIATION

EL DORADO COUNTY GEORGETOWN DIVIDE PUBLIC UTILITIES DISTRICT

PRELIMINARY

DESCRIPTION

The Georgetown Divide Public Utilities District (GDPUD) service area is in the northern part of El Dorado County on the west slope of the Sierra Nevada foothills, approximately 45 miles northeast of Sacramento, California. The service area straddles a ridge called Georgetown Divide, which separates the drainage basin of the Middle Fork American River and Rubicon River on the north from the South Fork American River on the south. The service area ranges in elevation between 800 and 3,500 feet and encompasses approximately 75,000 acres with water service to approximately 30,000 acres. The GDPUD sphere of influence is 173,000 acres. GDPUD furnishes treated agricultural and subagricultural uses through approximately 70 miles of ditch and over 200 miles of pipeline.

EXISTING WATER SUPPLY

The present source of water for GDPUD is surface water from the Stumpy Meadows Project located on Pilot Creek on the Middle Fork American River watershed. Stumpy Meadows Reservoir has a storage capacity of 20,000 acre-feet and usable pool of 18,800 acre-feet.

WATER DEMAND

In 1997, GDPUD's water demand was approximately 9,400 acre-feet. The net water demand for agricultural use is not expected to increase. Future increases in water demand are expected in the urban (treated) water demand and in the subagricultural use.

SUPPLEMENTAL WATER SUPPLIES

The supplemental water to meet increasing water demands will be derived from a reduction in conveyance losses and from new supplies. New supplies, most probably, will have to be pumped from the North Fork American River downstream of the Auburn Dam site. Options available for new supplies include a water service contract with the U.S. Bureau of Reclamation (USBR) under PL-101-514, and arrangements with other entities having water rights in the American River Basin including the City of Sacramento, Placer County Water Agency, and the East Bay Municipal Utility District.

PROBLEMS/CONSTRAINTS

The problems or constraints for GDPUD to meet its increased water demands are as follows:

1. Environmental -- Environmental constraints are anticipated for implementing programs for water conservation and new water supply. Reducing seepage losses along existing ditches may be an issue to the extent some area wetlands have become established. Routing additional water from the American River Basin will be an issue.
2. Legal -- Obtaining a water service contract from the USBR, obtaining water rights, or executing agreements with other agencies to provide supplemental water from the North Fork American River will be time-consuming and difficult to accomplish, even though the water needs are small in relation to the average annual runoff from the basin of more than 2.7 million acre-feet.
3. Financial -- The cost to implement measures to reduce losses along GDPUD's ditch system will cost in excess of \$3 million. The cost to construct facilities to pump water from the North Fork American River is approximately \$11 million.

PRELIMINARY

EL DORADO COUNTY
GEORGETOWN DIVIDE PUBLIC UTILITIES DISTRICT
WATER DEMAND AND SUPPLIES

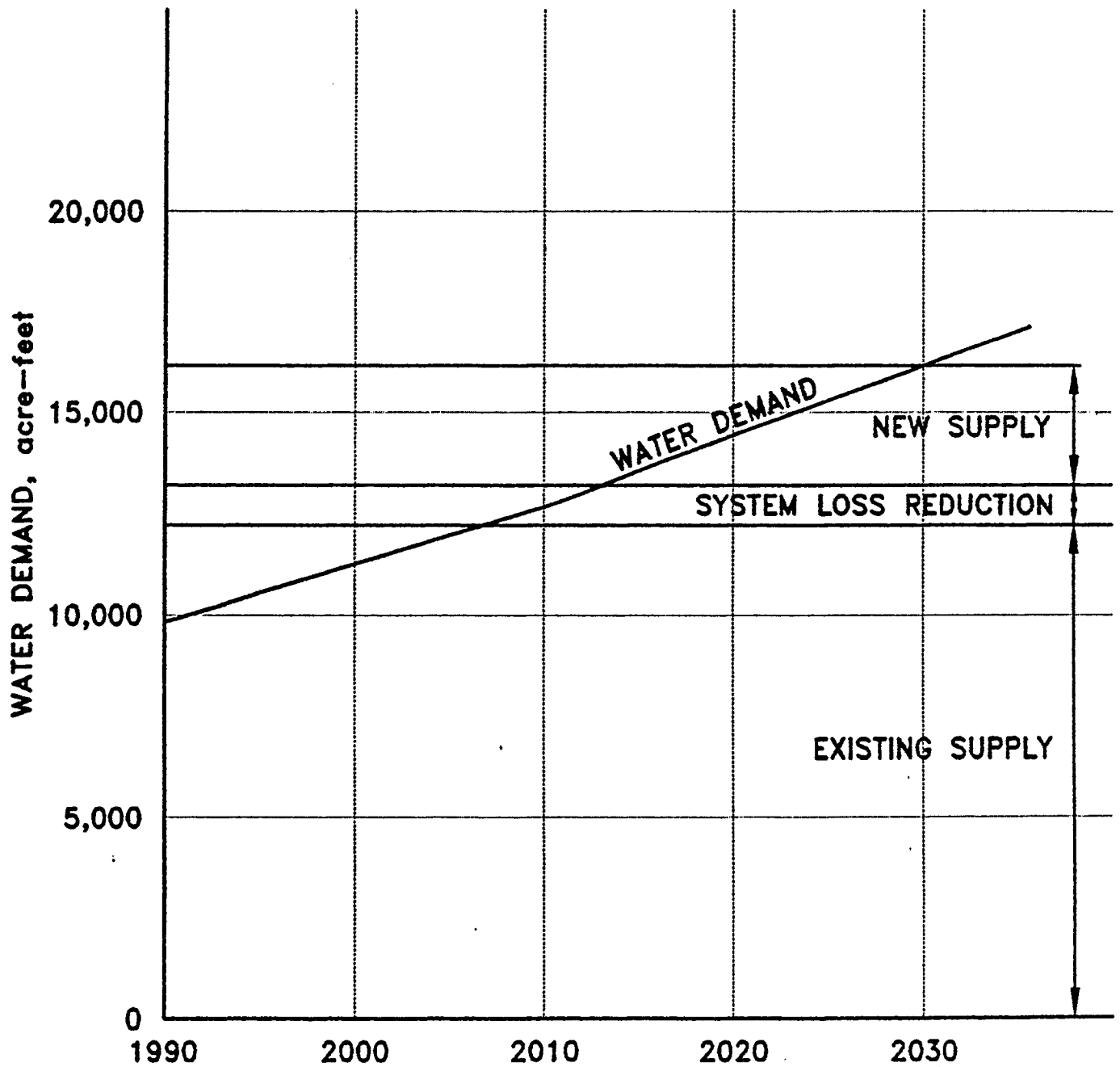


Figure 1

MOUNTAIN COUNTIES WATER RESOURCES ASSOCIATION

EL DORADO COUNTY GRIZZLY FLATS COMMUNITY SERVICES DISTRICT

PRELIMINARY

DESCRIPTION

The Grizzly Flats Community Services District (GFCSD) service area is in the south-central part of El Dorado County on the west slope of the Sierra Nevada foothills, approximately 52 miles east of Sacramento, California. The service area is located adjacent to the eastern boundary of the El Dorado Irrigation District's sphere of influence, between the North Fork Cosumnes River and the Steely Fork Cosumnes River. The service area ranges in elevation from approximately 3,600 to 4,200 feet mean sea level, and encompasses approximately 1,115 acres with water service to approximately 459 customers. The GFCSD sphere of influence is approximately 9,200 acres. GFCSD furnishes treated water for residential use to customers within the Grizzly Park subdivisions, as well as to a few large perimeter parcels.

EXISTING WATER SUPPLY

The present source of water for GFCSD is surface water from Big Canyon and North Canyon, which are tributaries in the North Fork Cosumnes River watershed. Water is diverted from the tributaries into the Eagle Ditch pipeline and conveyed to a raw storage reservoir adjacent to the water treatment plant. The reservoir has a storage capacity of approximately 22.80 acre-feet and usable pool of 16.66 acre-feet. The current safe yield from the existing system is 143.5 acre-feet per year.

WATER DEMAND

In 1997, GFCSD's water demand was approximately 148 acre-feet. Future increases are expected in the urban (treated) water demand as a result of residential growth and a shift from part-time to full-time occupancy.

SUPPLEMENTAL WATER SUPPLIES

The supplemental water to meet increasing water demands will be derived from system improvements and a new supplemental storage facility. System improvements would include adding a new groundwater well and lining the existing reservoir to reduce leakage. New supplemental storage would be provided by constructing an off-stream reservoir adjacent to the Eagle Ditch pipeline.

PROBLEMS/CONSTRAINTS

The problems or constraints for GFCSD to meet its increased water demands can be categorized as:

1. Environmental -- Environmental constraints are anticipated for implementing a program for a new water supply. GFCSD is currently served by a pre-1914 water right for the direct diversion of available flows from Big Canyon and North Canyon, as well as a permit authorizing GFCSD to divert water to storage. The latter is not to exceed 31 acre-feet per year. Although GFCSD's pre-1914 water rights should be adequate to supply an off-stream reservoir, the district will need to pursue a permit authorizing them to divert to supplemental storage, due to the projected increase in required volume.
2. Legal -- Obtaining a permit authorizing additional storage, or executing agreements with other agencies to provide supplemental water supply, will be time-consuming and difficult to accomplish, even though the water needs are small in relation to the estimated average annual runoff from Big Canyon and North Canyon of 2,070 and 1,365 acre-feet, respectively.
3. Financial -- The opinion of probable construction cost to implement system improvements and construct a supplemental off-stream storage reservoir is approximately \$60,000 and \$4.6 million, respectively.

PRELIMINARY

EL DORADO COUNTY GRIZZLY FLATS COMMUNITY SERVICES DISTRICT WATER DEMAND AND SUPPLIES

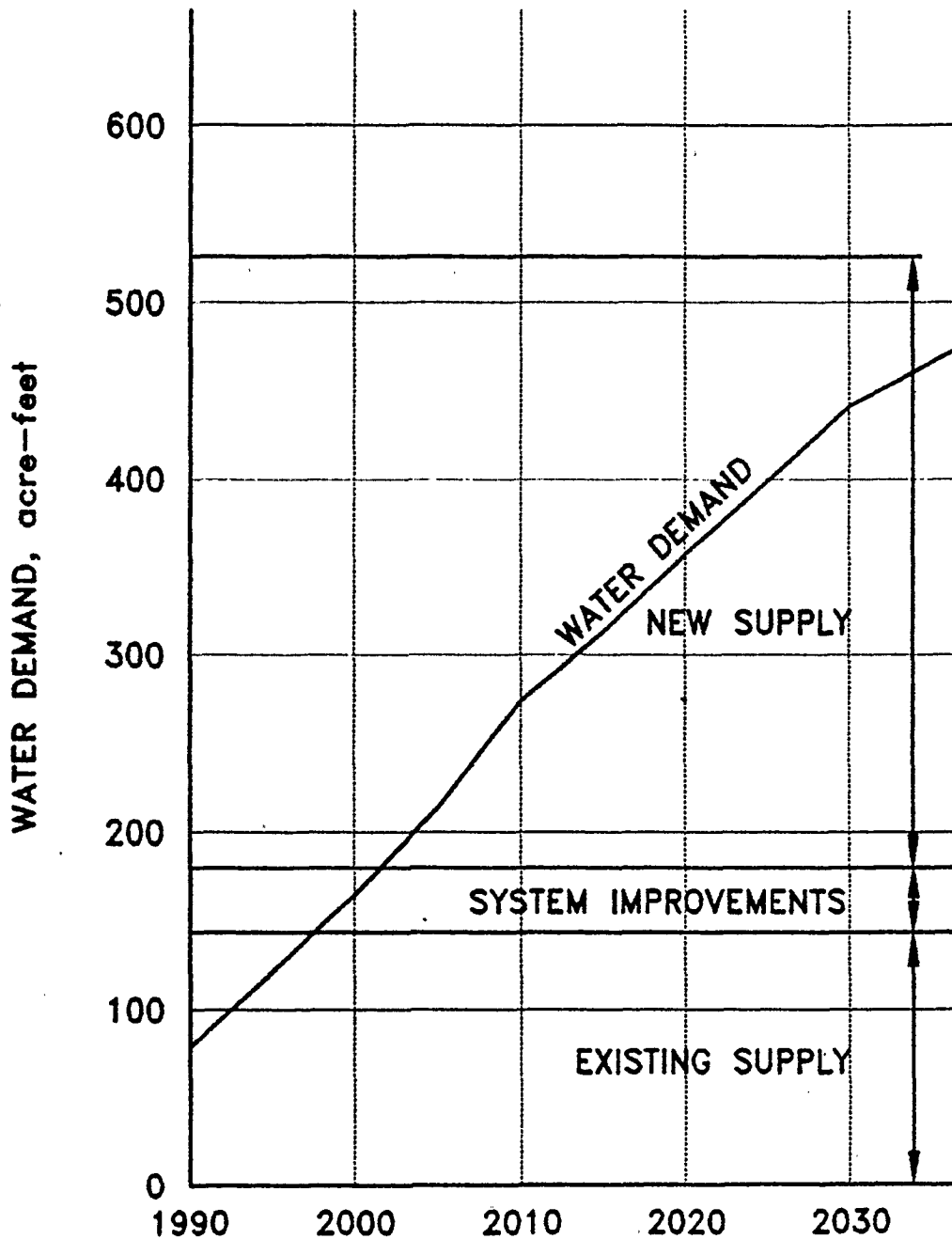


Figure 2

MOUNTAIN COUNTIES WATER RESOURCES ASSOCIATION

AMADOR COUNTY

PRELIMINARY

DESCRIPTION

Amador County (population 34,000) lies approximately 50 miles from Sacramento, California, on the eastern slope of the Sierra Nevada between the South Fork Cosumnes River and the Mokelumne River. Elevations vary from 150 feet in the west to 9,332 feet at Mokelumne Peak in the east. There are five cities in the county making up approximately 35 percent of the total population.

Many water systems rely on old mining-era ditches for conveyance. Although there are no well-defined groundwater basins in Amador County, many people in the rural areas rely on groundwater from wells in fractured rock with unpredictable yield.

EXISTING WATER SUPPLY

The present source of water for four of the five cities is surface water from the Mokelumne River. The water is obtained by tapping into the storage and major conveyance facilities of Pacific Gas and Electric Company (PG&E). One city is using a combination of wells and surface supply diverted from the Cosumnes River through a ditch system. Jackson Valley Irrigation District has a limited supply of surface water from an interior watershed (Jackson Creek). The remainder of the county relies on the limited groundwater.

WATER DEMAND

In 1994, the County's total urban and agricultural water demand was approximately 26,000 acre-feet. By year 2020, the total demand will be 37,000 acre-feet, and year 2030 over 40,000 acre-feet.

SUPPLEMENTAL WATER SUPPLIES

Groundwater supplies throughout Amador County are not reliable in terms of quantity and quality. Supplemental water to meet increasing water demands will be derived from a reduction in conveyance losses and from new supplies. Most likely, new supplies will have to come from the Mokelumne River. New supplies from the Mokelumne River will require arrangements with PG&E and/or East Bay Municipal Utility District (EBMUD) and Colusa County Water District (CCWD) for use of their storage facilities.

PROBLEMS/CONSTRAINTS

The problems or constraints for Amador County to meet its increased water demands are as follows:

1. Environmental -- Environmental issues are anticipated in implementing programs for water conservation and new water supplies. Reducing seepage losses along existing ditches may be an issue to the extent wetlands have become established. Increasing diversions from the Mokelumne River may also be an issue.
2. Legal -- Obtaining additional supplies from the Mokelumne River will require new agreements involving one or more of the parties with existing rights or entitlements. The parties include PG&E, EBMUD, and CCWD.
3. Financial -- The cost to implement measures to reduce conveyance losses is approximately \$9 million. Costs of this magnitude are extremely expensive in relation to the revenue base in Amador County.

PRELIMINARY

AMADOR COUNTY WATER DEMAND AND SUPPLIES

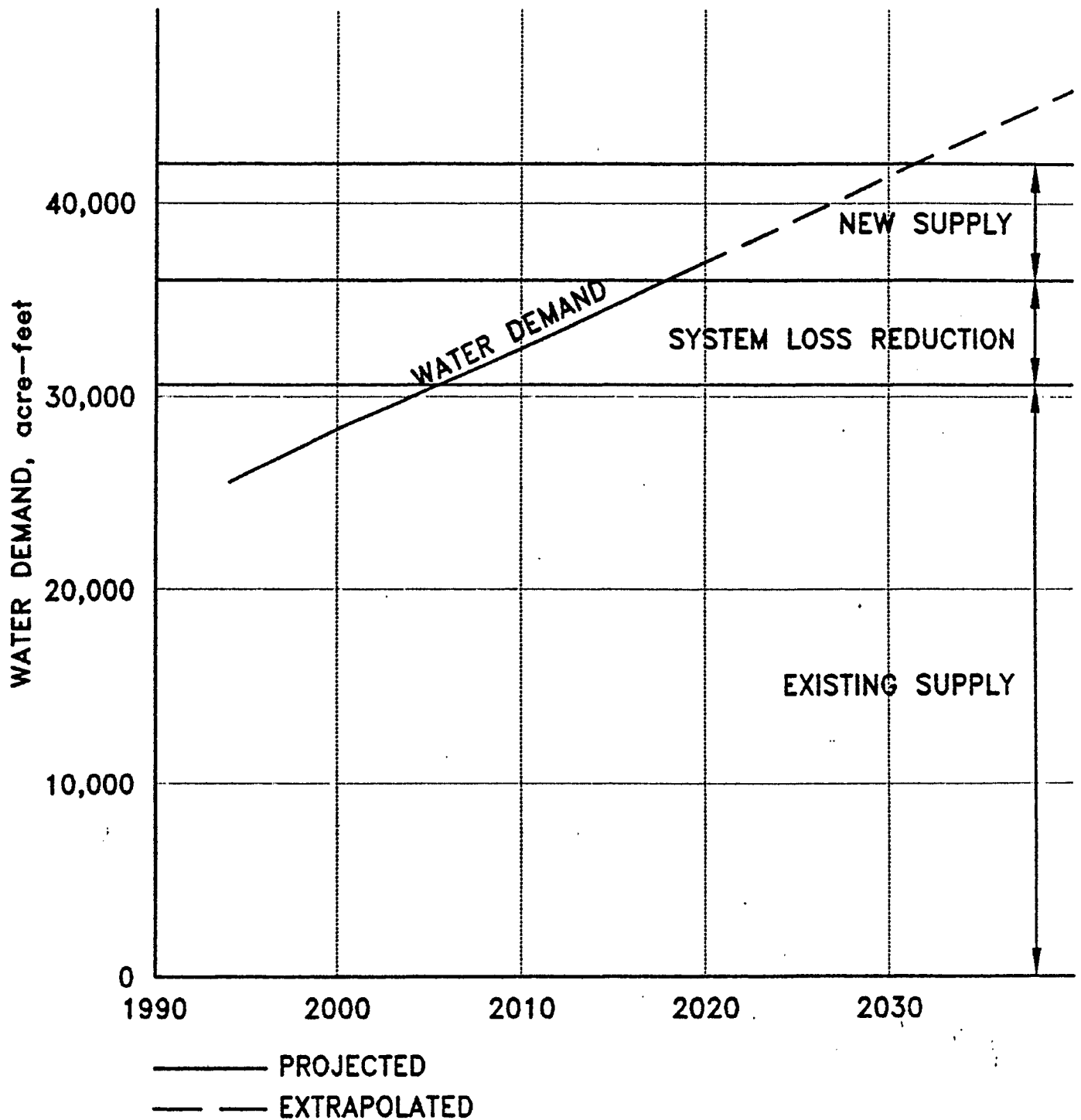


Figure 3

MOUNTAIN COUNTIES WATER RESOURCES ASSOCIATION

CALAVERAS COUNTY

PRELIMINARY

DESCRIPTION

Public water supplies in Calaveras County are served by five water purveyors: Calaveras County Water District; Calaveras Public Utilities District; Union Public Utility District; City of Angels; and Valley Springs Public Utility District. Calaveras County encompasses an area of 657,920 acres covering more than 50 miles of valleys, foothills, and mountain peaks, from Comanche Reservoir on the west to Bear Valley on the east. The topography ranges from approximately 200 feet msl in the northwest region to a peak of 8,170 feet msl near Alpine County. Twenty-three percent of the county is in public ownership. The existing population of nearly 40,000, is projected to more than double by 2020.

EXISTING WATER SUPPLY

The majority of the water supplied by the public water purveyors is from the North Fork Stanislaus and Mokelumne river systems with some from the Calaveras system at New Hogan Reservoir. Entitlements to meet long-term needs are available in the form of water rights, contracts, and agreements involving the North Fork Stanislaus, Mokelumne, and Calaveras rivers.

WATER DEMAND

The existing water demand served by public water purveyors, including agricultural use, is nearly 12,000 acre-feet per year. A substantial increase is expected to accommodate the future population. A significant increase is anticipated for agricultural use associated with an emerging wine-producing industry as well.

SUPPLEMENTAL WATER SUPPLIES

Entitlements exist to meet future water demands, however, a significant investment in new infrastructure will be required. Supplies from the North Fork Stanislaus River can be effectively utilized to meet a major part of the increased demands. Agreements with other parties including East Bay Municipal Water District, Amador County, Pacific Gas and Electric Company, and other downstream water users could facilitate this effort.

PROBLEMS/CONSTRAINTS

The problems or constraints for Calaveras County to meet its increased water demands include the following:

1. Environmental -- Environmental issues are anticipated for implementing projects for conveyance of water within the County.
2. Legal -- Agreements will be needed among various parties to facilitate executing arrangements that provide for the most effective utilization of the water resources available.
3. Financial -- The cost to construct water conveyance facilities to make effective use of the supplies available is approximately \$20 million.

PRELIMINARY

CALAVERAS COUNTY WATER DEMAND AND SUPPLIES

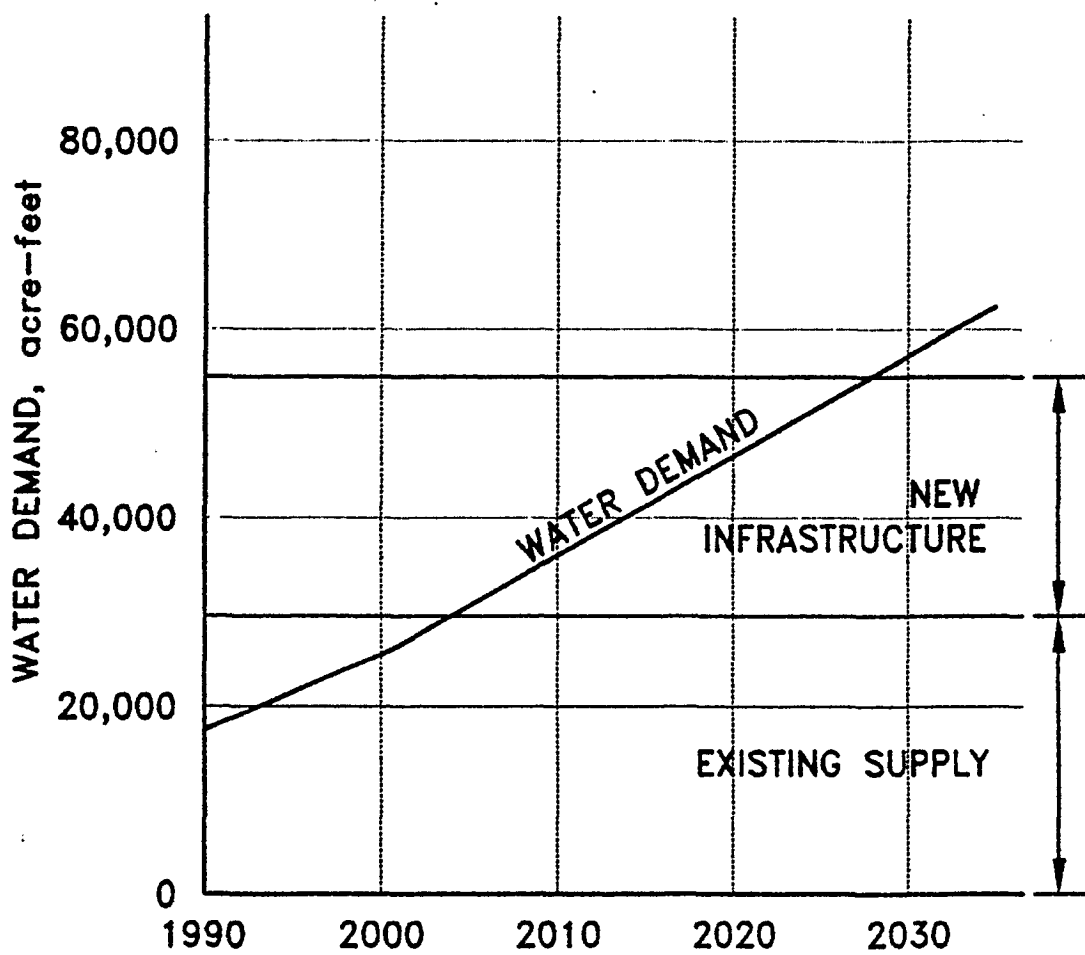


Figure 4

MOUNTAIN COUNTIES WATER RESOURCES ASSOCIATION

TUOLUMNE COUNTY TUOLUMNE UTILITIES DISTRICT

PRELIMINARY

DESCRIPTION

The service area of the Tuolumne Utilities District (TUD) contains nearly 80 percent of the population, permanent and seasonal, in Tuolumne County. The Middle Fork and South Fork Stanislaus, and North Fork Tuolumne rivers run through TUD, and the Tuolumne River forms its south boundary.

The majority of TUD's raw water supply is conveyed through nearly 90 miles of ditches that were, to a large extent, constructed during the mining era and were acquired from the Pacific Gas and Electric Company (PG&E).

EXISTING WATER SUPPLY

TUD obtains its water from the South Fork Stanislaus River through agreements with PG&E. PG&E owns and operates Lyons and Strawberry reservoirs, which have storage capacities of 6,300 and 18,312 acre-feet, respectively.

WATER DEMAND

Treated water service represents approximately 50 percent of TUD's delivery with the remaining 50 percent being delivered for agricultural and industrial use and golf courses. Treated water service is expected to comprise a greater percent of TUD's service in the future, although the water use for agriculture, industry, and golf courses is expected to increase as well. TUD's demand of approximately 17,000 acre-feet in 1995, is projected to increase to nearly 27,000 acre-feet by 2020.

SUPPLEMENTAL WATER SUPPLIES

The supplemental water to meet increasing water demands will be derived from a reduction in conveyance losses and water purchases from PG&E and the U.S. Bureau of Reclamation from New Melones Reservoir. TUD has investigated the development of New Lyons Reservoir with a capacity of up to 50,000 acre-feet, to satisfy its long-term water needs.

PROBLEMS/CONSTRAINTS

The problems or constraints for TUD to meet its increased water demands are as follows:

1. Environmental -- Environmental constraints are anticipated in implementing water conservation measures to reduce losses along existing ditches. The reduction of seepage may be an issue in areas where the seepage has created wetlands. Environmental issues may emerge with the construction of a New Lyons Reservoir as well.
2. Legal -- Developing New Lyons Reservoir will involve contract negotiations with PG&E, as it may affect operations under existing agreements.
3. Financial -- The cost to implement measures to reduce losses along TUD's ditch system have been estimated to cost from \$6 to \$25 million, depending upon the extent to which the existing ditches are lined or replaced with pipe.

PRELIMINARY

TUOLUMNE COUNTY
TUOLUMNE UTILITIES DISTRICT
WATER DEMAND AND SUPPLIES

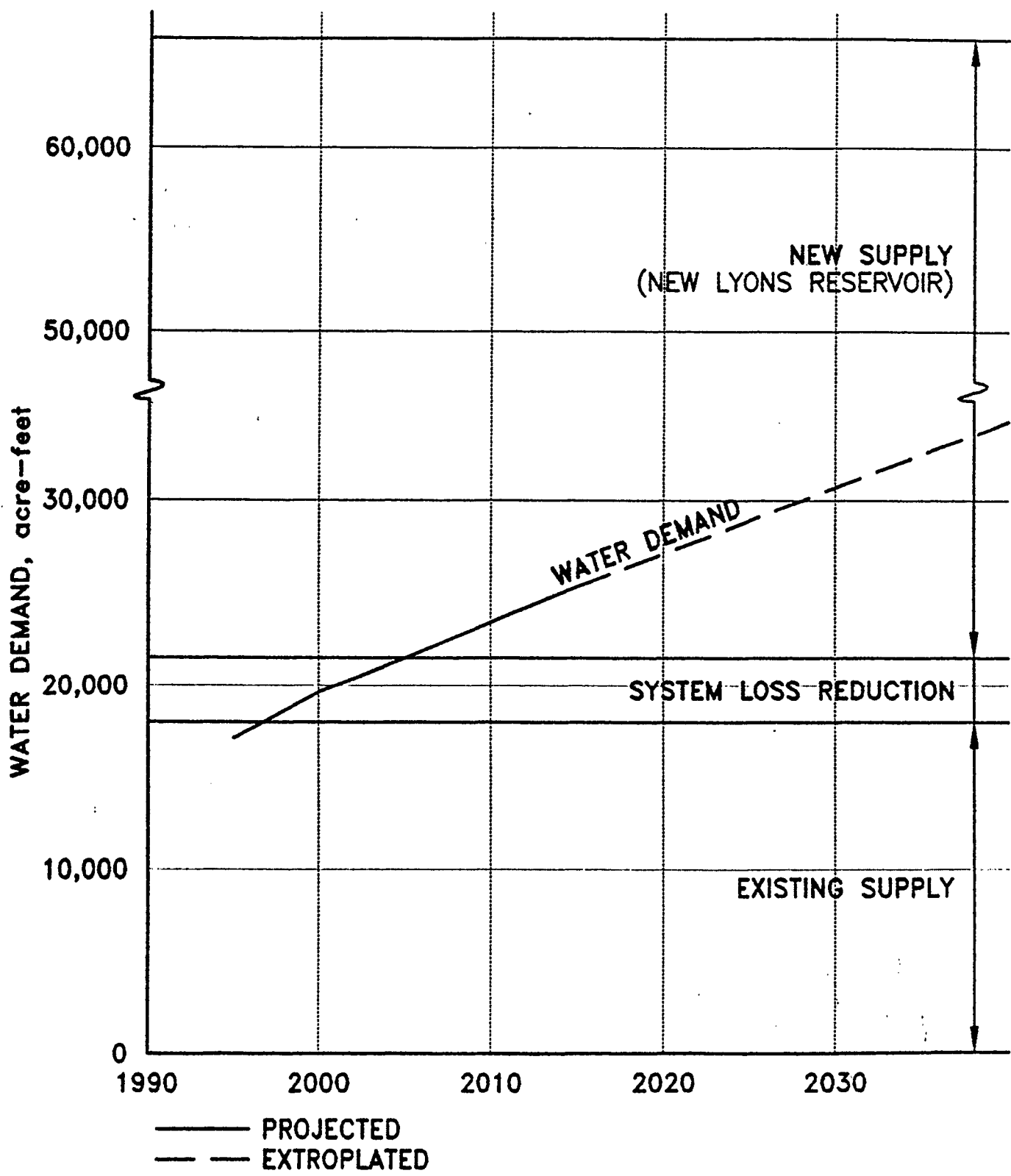


Figure 5

Ag/Urban Budget Report

May 18, 1998

SUMMARY OF REVENUES AND EXPENSES

CATEGORY	PHASE I	PHASE II	PHASE III	TOTALS
Revenues	197,500	561,052	448,914	1,207,466
Carryover Revenues	0	17,785	137,639	
Subtotal, Available Funds	197,500	578,837	586,553	
Expenses	179,715	441,199	172,231	793,145
Carryover into next phase	17,785	137,638		

SUMMARY OF PHASE III INCOME, CURRENT AND EXPECTED

Participant	Budgeted	Current	July 1998	Total
ACWA	100,000	100,000	0	100,000
CUWA	275,000	137,500	137,500	275,000
City of San Francisco*				
Contra Costa WD*				
East Bay MUD*				
MWDSC*				
MWDOC*				
San Diego County WA*				
CVPWA	100,000	23,913	50,000	73,913
Kern County WA	25,000	25,000	0	25,000
NCWA	25,000			0
RCRC	25,000			0
San Joaquin River Group	25,000	25,000	0	25,000
SL&DMWA	25,000	25,000	0	25,000
SWC	100,000	100,000	0	100,000
TLBWSD	12,500	6,250	6,250	12,500
WWD	25,000	6,250	6,250	12,500
Others **	137,500	0	100,000	100,000
TOTAL	875,000	448,913	300,000	748,913
* contributions thru CUWA				
** July 1998 contributions expected from SWC members (others?)				

Ag/Urban Phase III Budget
January - June, 1998

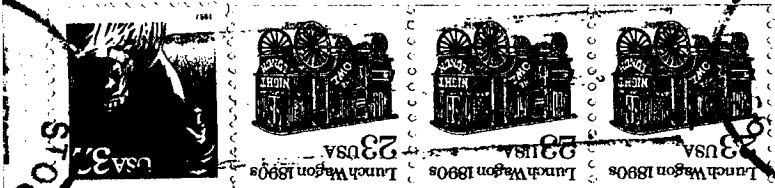
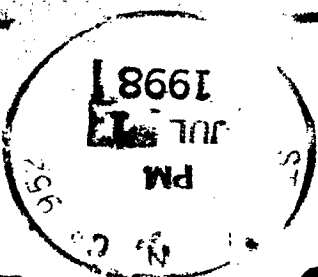
Work Element	Budget Amount 1-98 thru 6-98
Technical	
Policy Group meeting costs	20,000
Facilities & Operations	80,000
Finance & Assurances	130,000
Ecosystem Restoration	75,000
Water Quality	
Cost Estimating	
Production & Publications	
Contingency	40,000
<i>Subtotal, Technical</i>	<i>345,000</i>
Facilitation	
Policy Group meetings	55,600
Project Coordination (agenda preparation, meeting notes, decision documents, action items)	3,800
Communication with participants	21,200
Develop strategy and work products	61,500
Communication w/key decision makers	46,000
travel, copying, phones, etc.	27,000
Contingency	24,000
Three-way meetings (up to \$60,000)	
<i>Subtotal, facilitation</i>	<i>239,100</i>
TOTAL	584,100

MOUNTAIN COUNTIES WATER RESOURCES ASSOCIATION

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DEPARTMENT OF
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